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Can neuroforecasting predict market behaviour?

By ***Alexander Genevsky***

For generations, marketers have tried to get into the mind of the consumer. Now, using new brain imaging techniques, we're tantalizingly close. The emerging science of neuroforecasting is still very young, but bit by bit, researchers are learning more about the connection between thinking – or more specifically, reacting – and doing.

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Until recently, most of this work has focused primarily on predicting an individual's behaviour. In my latest study, with colleagues at Stanford University and the University of Michigan, we found that not only is neuroforecasting a useful tool for predicting individual behaviour, it may be even more useful for forecasting the behaviour of a group.

Earlier studies have found that neural responses in the nucleus accumbens (NAcc) and the medial prefrontal cortex (MPFC) are associated with certain kinds of subsequent judgments. For example, previous studies have found that brain activity can predict how much someone likes a product and which of two options they will choose. NAcc responses in particular have been used to predict choices from gambles to purchases to investments.

These studies did not, however, identify whether neural activity that predicted individual responses could be generalized to predict group responses. Here we wanted to see if we could use neural activity not only to predict individual choice but also to forecast group behaviour on Kickstarter, a popular online crowdfunding marketplace. We conducted two studies with 30 participants each, a main study and a follow-up study that repeated the experiment. The results of that second study supported those of the first.

In our first study, we recruited 30 right-handed adults, most of whom lived in Palo Alto, California. They were each placed into an MRI machine and ▸

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shown 36 crowdfunding appeals from the most recently posted documentary film projects on Kickstarter.

Other researchers have used crowd funding sites such as Kickstarter for various kinds of behavioural research, such as understanding the dynamics of personal networks or the motivations of project creators, but researchers had not yet looked at whether individual funders' behaviour can be used to forecast a project's chance of reaching its fundraising goal.

For each proposal, subjects first viewed a photographic image from a project page, then a screen depicting the remainder of the project's text description. After reviewing the proposal, the subject pressed a button indicating whether he or she would like to fund the project. At the same time, we collected data about each participant's reaction from the MRI.

On the basis of previous work in the field, we focused on two areas of the brain associated with funding decisions, the MPFC and the NAcc. We predicted that activity in both areas of the brain would forecast individual choices to fund but we hypothesized that activity in the NAcc, which is a part of the brain associated with positive emotions and reward, might forecast market outcomes better than activity in the MPFC – and possibly even better than the conscious thoughts of the brain's owner.

Of the 36 projects reviewed in the study, 18 were eventually funded by groups of internet contributors, while the remaining 18 did not reach their funding threshold, and their appeal failed.

After the fundraising windows for these projects had closed, we compared what subjects had said they liked and wanted to fund with their neural responses. We found our test subjects couldn't tell us or show us anything useful when it came to predicting successful crowdfunding campaigns. Neither their self-reported ratings of liking nor their perceptions of the likelihood of a project's success performed very well. Overall, individuals' responses aligned with the winners only 52.9 per cent of the time.

By contrast, a strong NAcc response aligned with winners 67 per cent of the time, regardless of the subjects' mood. In other words, the subjects' gut instinct, their neurological response, turned out to be a better predictor of whether a project was funded than what they could tell us consciously.

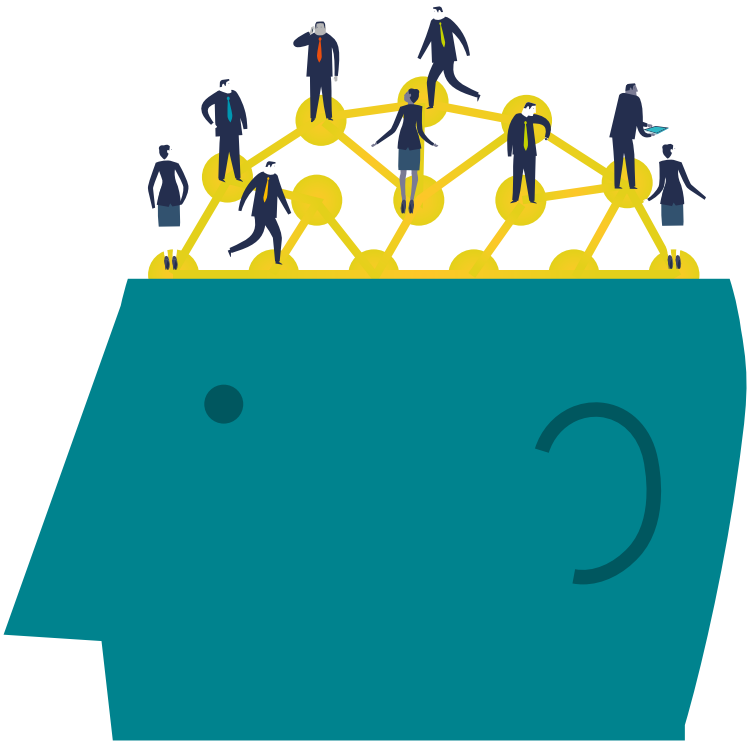
When we repeated the study, we achieved nearly the same results, indicating that NAcc activity was a better predictor of project funding than people's conscious statements.

What you really want

Using the MRI, we were able to measure a basic neural response that they were either unable or unwilling to share – a response that they were not even necessarily aware that they were having, but which was nonetheless informative about future behaviour. Our theory about why this works is that we have basic emotional responses when we are first confronted with a choice. Subsequent thinking and reassessment only cloud the issue.

It's similar to what might happen if I were to bring in a plate of warm cookies into a room: everyone might want one, but before they actually take a cookie, they will think twice. They might decide to pass, for instance, if they remember that they are trying to lose weight, or if they are going out to dinner and don't want to spoil their appetite. But if we could measure their first neural responses when the plate of cookies arrived in the room, before all those other concerns came into play, we might be able to get a real sense of how appealing those cookies are.

But that's just a theory. We don't really know yet whether the part of the brain that sparks when it makes a crowdsourcing decision works in similar ways for other kinds of decisions. It might be that the NAcc is only put



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"...we are getting close to a time when biologically based and neural measurements will play a significant role in mainstream marketing."

to work when comparing good things – like movies and cookies – but other regions might be involved when the choices are more negative, less emotional, or involve complex considerations, such as probability. Future research will experiment with these variations to see if other parts of the brain take part in different kinds of decisions.

Whatever the exact mechanism, our results do suggest that neuroforecasting is likely to become an important tool for marketers and policymakers. I think we are getting close to a time when biologically based and neural measurements will play a significant role in mainstream marketing. In the short run, however, the more important aspect of neuroforecasting is likely to be the deeper insight it gives us into the complex mental and emotional process that goes into every choice – at least that's what I think I think. ■

This article draws its inspiration from the paper, *When Brain Beats Behavior: Neuroforecasting Crowdfunding Outcomes*, written by Alexander Genevsky, Carolyn Yoon, and Brian Knutson. *The Journal of Neuroscience*, 37(36), 8625-8634, 2017. DOI: https://doi.org/10.1523/JNEUROSCI.1633-16.2017

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